

**REMARKS**

Claims 1-3, 5-16, 18-20 and 22-26 are pending herein. By this Amendment, claim 1 has been amended to limit the polystyrene polymer to polystyrene homopolymers consisting of styrene units.

In the Office Action, claims 19, 24 and 26 were rejected under 35 U.S.C. §112, second paragraph; claims 1-3, 5-16, 18, 19 and 22 were rejected under 35 U.S.C. §102(b) as being anticipated by Gottschalk et al., Macromol. Symp. 83, 127-146, 1994 ("Gottschalk et al."); claims 1-26 were rejected under 35 U.S.C. §102(b) as being anticipated by Mehler; and claims 1-3, 5-16, 18-20 and 22-26 were rejected under §102(b) as being anticipated by DE 4240445 to Gottschalk ("DE '445").

In an Amendment filed May 27, 2003, the following amendments were made:

(1) claim 1 was amended to limit the polystyrene polymer to polystyrene polymers selected from the group consisting of polystyrene homopolymers consisting of styrene units, acrylonitrile butadiene styrene polymers, and high impact polystyrene polymers;

(2) claims 20 and 26 were amended to insert the term --copolymer-- after the term "pentablock";

(3) claim 24 was amended to replace the term "polydienes" with the term --polymerized dienes--; and

(4) claim 26 was amended to limit the vinyl aromatic resin to polystyrene homopolymers consisting of styrene units, acrylonitrile butadiene styrene polymers, and high impact polystyrene polymers.

In the Advisory Action, the Examiner withdrew the §112 rejection of claims 19, 24 and 26 and the §102 rejections of claim 26. Thus, claim 26 is in allowable form. In addition, the Examiner stated that all rejections relying upon DE '445 were withdrawn. Therefore, the following rejections remain:

(1) the §102(b) rejection of claims 1-3, 5-16, 18, 19 and 22-25 as being anticipated by Gottschalk et al.; and

(2) the §102(b) rejection of claims 1-3, 5-16, 18-20 and 22-25 as being anticipated by Mehler.

In the Advisory Action, the Examiner did not expressly state whether the Amendment filed May 27, 2003 was entered. However, because the Examiner withdrew the §112 rejection and the §102 rejections of claim 26, Applicants assume the Amendment was entered. Thus, in the attached Listing of Claims, claim 1 is written as though the May 27 Amendment had been entered.

In view of the amendments and remarks herein, Applicants respectfully request reconsideration and withdrawal of the rejections maintained in the Advisory Action.

**I. Rejection of Claims 1-3, 5-16, 18, 19 and 22-25 as Being Anticipated by Gottschalk et al.**

In the Advisory Action, the Examiner stated that:

With regard to Gottschalk, applicants argue that Gottschalk does not teach the use of applicants' specific polystyrene polymers. However, with regard to Gottschalk, note the Abstract thereof which discloses 'blends of PPE with SAN, as well as with ABS' and that 'the interfacial tension between the blend components is significantly reduced upon addition of . . . triblock copolymers (PS-b-PEB-b-PMMA)'.

It is noted that ABS is embraced by the acrylonitrile butadiene styrene polymers of the instant claims.

As noted above, claim 1 has been amended to limit the polystyrene polymer to polystyrene homopolymers consisting of styrene units. Thus, amended claim 1 and the claims dependent therein do not include ABS within its scope. Gottschalk et al. does not teach the use of a polystyrene homopolymer. Therefore, for at least this reason, Gottschalk et al. does not anticipate instant claims 1-3, 5-16, 18, 19 and 22-25.

## **II. Rejection of Claims 1-3, 5-16, 18-20 and 22-25 as Being anticipated by Mehler**

In the Advisory Action, the Examiner stated that:

With regard to Mehler, note the CAPLUS Abstract which discloses that '(F)or a tech. prodn. of the SBM-modified polymeric blends, pure PPE was replaced with a mixture of 70% PPE and 30% of toughened polystyrene'. Note that Mehler teaches a blend of polyphenylene ether and styrene acrylonitrile and therefore Mehler meets all the limitations of the claims given that toughened polystyrene is embraced by applicants' high impact polystyrene polymers. While it is true that SAN alone does not meet the limitations of the claims, the toughened polystyrene of Mehler does meet the limitations of the claims and therefore the reference anticipates the claims. The word 'comprising' does not exclude the claim elements not explicitly recited.

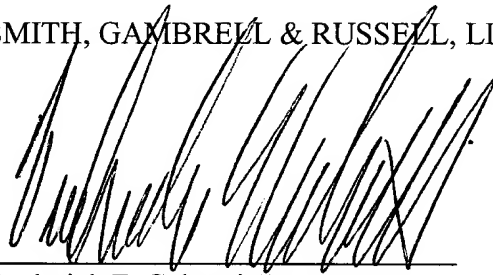
Because claim 1 has been amended to limit the polystyrene polymer to polystyrene homopolymers consisting of styrene units, high impact polystyrene polymers are excluded from claim 1 and the claims dependent thereon. Mehler does not teach the use of a polystyrene homopolymer. Therefore, for at least this reason, Mehler does not anticipate instant claims 1-3, 5-16, 18, 19 and 22-25.

**III. Conclusion**

In view of the amendments and remarks herein, Applicants respectfully request that the rejections maintained in the Advisory Action be withdrawn and that claims 1-3, 5-16, 18, 19 and 22-25, like claim 26, be allowed.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

A handwritten signature in black ink, appearing to read 'Frederick F. Calvetti', is written over a horizontal line.

Frederick F. Calvetti, Reg. 28,557  
1850 M Street, NW – Suite 800  
Washington, DC 20036  
Telephone : 202/263-4300  
Facsimile : 202/263-4329

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### LISTING OF CLAIMS

Claim 1 (Currently Amended): Rigid material based on PPO and a polystyrene polymer with improved impact strength comprising:

- 99 to 20% of a resin (A) consisting of a mixture of PPO and of a polystyrene homopolymer polymer, ~~the polystyrene polymer being selected from the group consisting of polystyrene homopolymers consisting of styrene units, acrylonitrile butadiene styrene polymers, and high impact polystyrene polymers, and~~
- 1 to 80% of an impact modifier comprising at least one block copolymer S-B-M in which:
  - each block is linked to the other by a covalent bond or an intermediate molecule linked to one of the blocks by a covalent bond and to the other block by another covalent bond,
  - M consists of MMA monomers optionally copolymerized with other monomers and comprises at least 50% by weight of methyl methacrylate (MMA),
  - B is incompatible with the resin (A) and with the M block and its glass transition temperature  $T_g$  is less than  $0^{\circ}\text{C}$ ,
  - S is incompatible with the B block and the M block and its  $T_g$  or its melting point m.p. is greater than the  $T_g$  of B,
  - S is compatible with the resin (A).

Claim 2 (Previously Amended): Material according to Claim 1, wherein the M blocks comprise at least 60% by mass of syndiotactic PMMA.

Claim 3 (Original): Material according to Claim 1, wherein the M blocks comprise reactive monomers, which include glycidyl methacrylate or tert-butyl methacrylate.

Claim 4 (Cancelled)

Claim 5 (Previously Amended): Material according to Claim 1, wherein the Tg of the B blocks is less than -40°C.

Claim 6 (Previously Amended): Material according to Claim 24, wherein the B blocks consist essentially of 1,4-polybutadiene.

Claim 7 (Previously Amended): Material according to Claim 24, wherein the dienes of the B block are hydrogenated.

Claim 8 (Previously Amended) Material according to Claim 25, wherein the B block consists of poly(butyl acrylate).

Claim 9 (Original): Material according to Claim 1, wherein the Tg or m.p. of S is greater than 23°C.

Claim 10 (Original): Material according to Claim 9, wherein the Tg or the m.p. of S is greater than 50°C.

Claim 11 (Original): Material according to Claim 10, wherein S is polystyrene.

Claim 12 (Previously Amended): Material according to Claim 1, wherein the number-average molar mass of the block copolymer S-B-M is between 10,000 g/mol and 500,000 g/mol.

Claim 13 (Previously Amended) Material according to Claim 12, wherein the number-average molar mass of the block copolymer S-B-M is between 20,000 g/mol and 200,000 g/mol.

Claim 14 (Previously Amended) Material according to Claim 1, comprising from 1 to 35% of the impact modifier and from 99 to 65% of resin (A).

Claim 15 (Previously Amended) Material according to Claim 14, comprising from 4 to 25% of the impact modifier and from 96 to 75% of resin (A).

Claim 16 (Previously Amended) Material according to Claim 1, wherein the impact modifier further comprises at least one polymer selected from the diblock copolymers S-B.

Claim 17 (Cancelled)

Claim 18 (Previously Amended): Material according to Claim 16, wherein the diblock S-B has a number-average molar mass which is between 10,000 g/mol and 500,000 g/mol.

Claim 19 (Previously Amended): Material according to Claim 1, wherein the impact modifier also comprises at least one triblock S-B-S selected from linear triblocks S-B-S and star-shaped triblocks S-B-S.

Claim 20 (Previously Amended): Material according to Claim 1, wherein part of the triblock S-B-M is replaced with a pentablock copolymer M-B-S-B-M.

Claim 21 (Cancelled)

Claim 22 (Previously Amended): Material according to Claim 1, wherein the PPO to polystyrene polymer weight ratio is between 1/9 and 9/1.

Claim 23 (Original): Material according to Claim 22, wherein the ratio is between 3/7 and 7/3.

Claim 24 (Previously Amended): Material according to Claim 1, wherein the B block comprises dienes, polymerized dienes and/or random copolymers of diene.

Claim 25 (Previously Added): Material according to Claim 1, wherein the B block comprises an alkyl (meth)acrylate.

Claim 26 (Previously Amended): Rigid material based on PPO and an aromatic vinyl resin with improved impact strength comprising:

- 99 to 20% of a resin (A) consisting of a mixture of PPO and of an aromatic vinyl resin, the aromatic vinyl resin being selected from the group consisting of polystyrene homopolymers consisting of styrene units, acrylonitrile butadiene styrene polymers, and high impact polystyrene polymers, and
- 1 to 80% of an impact modifier comprising:
  - (i) at least one block copolymer S-B-M in which:
    - each block is linked to the other by a covalent bond or an intermediate molecule linked to one of the



blocks by a covalent bond and to the other block by another covalent bond,

- M consists of MMA monomers optionally copolymerized with other monomers and comprises at least 50% by weight of methyl methacrylate (MMA),
  - B is incompatible with the resin (A) and with the M block and its glass transition temperature  $T_g$  is less than  $0^{\circ}\text{C}$ ,
  - S is incompatible with the B block and the M block and its  $T_g$  or its melting point m.p. is greater than the  $T_g$  of B,
  - S is compatible with the resin (A); and
- a pentablock copolymer M-B-S-B-M.